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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,639	08/17/2001	Neal G. Skinner	2000IP000227	6326

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EXAMINER
SEDIGHIAN, REZA

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 11/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/932,639	SKINNER NEAL G.
	Examiner	Art Unit
	M. R. Sedighian	2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 August 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-13,19,20,25,27,28,30,39,40 and 44-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-13,19,20,25,27,28,30,39,40 and 44-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

1. This communication is responsive to applicant's 8/12/02 amendments in the application of Neal G. Skinner for "Multiplexed Distribution of Optical Power" filed 8/17/01. The amendments have been entered. Claims 11-13, 19-20, 25, 27-28, 30, 39-40, and 44-61 are now pending.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 11-12, 25, and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo et al. (US patent No: 4,495,421) in view of Alferness et al. (US patent No: 5,627,925).

Regarding claims 11, 25, and 27, Endo discloses a method of providing electrical power (col. 4, lines 65-67) to multiple power consuming devices (2-1, 2-2, fig. 4), comprising the steps of: interconnecting each of the power consuming devices (2-1, 2-2, fig. 4) to a fiber optic line (40, fig. 4), so that each of the power consuming devices is selectable for operation thereof by transmitting one of multiple optical wavelength bands (λ1, λ2, λ3, fig. 4) through the fiber (col. 5, lines 24-32), wherein each of the transmitted optical wavelength bands (e.g. λ1) causes a respective one of the devices to be selected (e.g. 2-1, fig. 4), and wherein the transmitting step comprises simultaneously transmitting multiple ones of the optical wavelength bands (col. 5, lines 4-8), and the multiple wavelength bands being transmitted through the fiber by interconnecting a first optical coupler (11, fig. 4) to the fiber (40, fig. 4). Endo differs from the claimed invention in that Endo does not discloses the first optical coupler receiving separate

optical wavelength bands from multiple tunable filters. Alferness discloses an optical transmission system (col. 3, lines 59-61, col. 6, lines 41-51) that is comprised of a plurality of optical tunable filters (84a, 84b, fig 7D) and an optical coupler (88, fig. 7D). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate a plurality of tunable optical filters and a coupler such as the ones of Alferness for the optical couplers in the optical transmission system of Endo in order to selectively pass a desired wavelength along the transmission path to provide a plurality of different optical communication channels. Furthermore, incorporating tunable optical filters along different transmission paths to pass a desired signal, or to filter-out particular spectral portions of the light signals is well known in the field of optical communication. As to claim 25, Endo further discloses multiple control modules (30-1, 30-2, fig. 4) each of the control modules being operative to select the respective power consuming device (col. 5, lines 15-31), wherein the multiple optical wavelength bands being transmitted singly through the fiber optic line (note that fiber 40 carry a single multiplex signal).

Regarding claims 12 and 28, Alferness further discloses tunable filters (84a, 84b, fig. 7D) that are interconnected between a first optical coupler (82, fig. 7D) and a second optical coupler (88, fig. 7D).

4. Claims 13 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (US patent No: 4,495,421) in view of Chraplyvy et al. (US patent No: 5,907,420).

Regarding claim 13 and 30, Endo discloses a method of providing electrical power to multiple power consuming devices as discussed above in claims 11 and 25. Endo differs from the

claimed invention in that Endo does not specifically disclose respective multiple tunable lasers for the generation of optical signals. Chraplyvy discloses respective multiple tunable lasers (col. 4, line 9 and fig. 2). Therefore, it would have been obvious an artisan at the time of invention to incorporate respective tunable lasers such as the ones of Chraplyvy for the optical signal generation means in the transmission system of Endo in order to generate and transmit a plurality of selectable wavelengths and to enhance the flexibility of the system.

5. Claims 19 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (US patent No: 4,495,421) in view of Swanson et al. (US patent No: 6,433,904).

Regarding claims 19 and 39, Endo discloses a method of providing electrical power to multiple electronic devices as discussed above in claims 11 and 25. Endo differs from the claimed invention in that Endo does not specifically disclose the electronic devices are data storage devices. Swanson discloses an optical transmission system (10, fig. 1), wherein optical signals are coupled to optical to electrical converters (24a, 24b, fig. 1) and the converters output electrical signals (col. 4, lines 12-15) to respective data storage devices (26a, 26b, fig. 1). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate respective data storage devices such as the ones of Swanson for the electronic units of Endo in order to retrieve and collect the transmitted information at the receiver end for further signal processing and measurements.

6. Claims 20 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (US patent No: 4,495,421) in view of Bowling et al. (US patent No: 5,033,112).

Regarding claims 20 and 40, Endo discloses a method of providing electrical power to multiple electronic devices as discussed above in claims 11 and 25. Endo further discloses a variety of electrical appliances (col. 2, lines 34-35). Endo differs from the claimed invention in that Endo does not specifically disclose the electrical appliances have programmed functions. Bowling discloses the electrical appliances can be equipped with microprocessors having programmed functions (col. 9, lines 42-43). Therefore, it would have been obvious to an artisan at the time of invention to incorporate electrical appliances with programmed functions as disclosed by Bowling for the appliances in the optical apparatus of Endo in order to control the operation of appliances and to provide specific functions by each different appliance.

7. Claims 11-12, 25, and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pan (US patent No: 6,038,357) in view of Fevrier et al. (US patent No: 5,612,805).

Regarding claims 11, 25, and 27, Pan discloses a method of providing electrical signals (col. 3, lines 54-60) to multiple electronic devices (19A, fig. 1A), comprising the steps of: interconnecting each of the electronic devices (19A, fig. 1A) to a fiber optic line (15, fig. 1A), so that each of the electronic devices is selectable (col. 3, line 52) for operation thereof by transmitting one of multiple optical wavelength bands ($\lambda 1, \lambda 2, \ldots, \lambda_N$, fig. 1A) through the fiber optic line, and wherein each of the transmitted optical wavelength bands (e.g. $\lambda 1$) causes a respective one (the first electronic unit 19A) of the electronic devices to be selected (col. 3, lines 48-53), and transmitting various optical wavelength bands ($\lambda 1, \lambda 2, \ldots, \lambda_N$, fig. 1A) through the fiber optic line thereby, supplying electrical signals to corresponding selected ones of the electronic devices (col. 3, lines 52-53), and the transmitting step further comprises

simultaneously transmitting multiple ones of the optical wavelength bands (col. 3, lines 22-25), and the multiple wavelength bands being transmitted through the fiber line by interconnecting a first optical coupler (16, fig. 1A) to the fiber optic line. Pan differs from the claimed invention in that Pan does not specifically disclose providing electrical power to power consuming devices. Pan discloses a plurality of electronic devices 19A and 19B that condition the received electrical signals for operation in the receivers' electronic circuits (col. 3, lines 55-60). It would have been obvious that such electronic units consume power and the electrical signals provided to such units can be used to provide electrical power for such units. Pan further differs from the claimed invention in that Pan does not discloses the first optical coupler receiving separate optical wavelength bands from multiple tunable filters. Fevrier discloses an optical transmission system (col. 5, lines 36-37, 50-55 and fig. 3) that is comprised of a plurality of optical emitters (TX_1, TX_N, fig. 3) and a plurality of optical tunable filters (F_1^T, F_N^T and F_1^I, F_N^I, fig 3) along the transmission paths, and a plurality of optical couplers (C1, D1, fig. 3). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate a plurality of tunable optical filters such as the ones of Fevrier along the respective transmission paths in the optical transmission system of Pan in order to selectively pass a desired wavelength along the transmission path to provide a plurality of different optical communication channels. Furthermore, incorporating tunable optical filters along different transmission paths to pass a desired signal, or to filter-out particular spectral portions of the light signals is well known in the field of optical communication. As to claim 25, Pan discloses a fiber optic line (15 fig. 1A), multiple control modules (18A, fig. 1A) each of the control modules being operative to select the respective electronic devices (col. 3, lines 50-60), wherein the multiple optical wavelength bands

being transmitted singly through the fiber optic line (note that fiber 15 carry a single multiplex signal).

Regarding claims 12 and 28, Fevrier further discloses tunable filters (F_1^T, F_N^T and F_1^I, F_N^I, fig 3) that are interconnected between a first optical coupler (CD1, or D1, fig. 3) and a second optical coupler (C1, fig. 3).

8. Claims 13 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pan (US patent No: 6,038,357) in view of Hansen (US patent No: 6,034,799).

Regarding claim 13 and 30, Pan discloses a method of providing electrical signals to multiple electronic devices as discussed above in claims 11 and 25. Pan differs from the claimed invention in that Pan does not specifically disclose respective multiple tunable lasers. Hanson discloses respective multiple tunable lasers (212, 210, fig. 2). Therefore, it would have been obvious an artisan at the time of invention to incorporate respective tunable lasers such as the ones of Hansen for the optical transmitters in the transmission system of Pan in order to generate and transmit a plurality of selectable wavelengths to further enhance the flexibility of the system.

9. Claims 19 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pan (US patent No: 6,038,357) in view of Swanson et al. (US patent No: 6,433,904).

Regarding claims 19 and 39, Pan discloses a method of providing electrical signals to multiple electronic devices as discussed above in claims 11 and 25. Pan differs from the claimed invention in that Pan does not specifically disclose the electronic devices are data storage devices. Swanson discloses an optical transmission system (10, fig. 1), wherein optical signals

are coupled to optical to electrical converters (24a, 24b, fig. 1) and the converters output electrical signals (col. 4, lines 12-15) to respective data storage devices (26a, 26b, fig. 1). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate respective data storage devices such as the ones of Swanson for the electronic units in the receiving system of Pan in order to retrieve and collect the transmitted information at the receiver end for further signal processing and measurements.

10. Claims 20 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pan (US patent No: 6,038,357) in view of Fisher et al. (US patent No: 6,075,628).

Regarding claims 20 and 40, Pan discloses a method of providing electrical signals to multiple electronic devices as discussed above in claims 11 and 25. Pan differs from the claimed invention in that Pan does not specifically disclose the power consuming devices have programmed functions. Fisher discloses an optical communication system (fig. 1) with a transmit (7, fig. 1) and receive units (8, fig. 1), wherein at the receiving unit (8, fig. 1) the optical signals are received (9, fig. 1) and processed (col. 2, lines 40-45, col. 3, lines 14-46) by a signal processor (12, fig, 1). Therefore, it would have been obvious to an artisan at the time of invention to incorporate signal processor units with programming function such as the ones of Fisher for the respective electronic units in the receiving system of Pan in order to retrieve the electrical signals and to convert the electrical pulses into command data to further provide specific functions or measurement.

11. Claims 44, 48-49, 52-53, and 56-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Didden et al. (US patent No: 6,271,766).

Regarding claim 44, Didden discloses a well tool control system (20, fig. 1) for selectively supplying electrical power (col. 2, lines 48-55) to multiple electrical power consuming well tools (12, fig. 1) in a subterranean well (15, 52, 54, fig. 1) comprising of a fiber optic line extending in the well (col. 3, lines 29-32 and 10, fig. 1) for transmitting a plurality of optical signals of different wavelengths (λ_1, λ_2, ..., λ_n, fig. 1). Didden differs from the claimed invention in that Didden does not specifically disclose multiple control modules interconnected to the fiber optic line and Didden does not further disclose multiple opto-electric converters. Didden discloses a plurality of optical grating based sensors (12, fig. 1) along and coupled to a fiber (10, fig. 1) for measuring different parameters (col. 3, lines 34-43), wherein each sensor may reflect a portion of the light and passes the remaining portion (col. 4, lines 10-18). Therefore, each respective sensor is responsive to one of the multiple optical wavelength bands that are transmitted through the fiber and can function as control module interconnected to the fiber. Note that each sensor 12 is responsive to one of multiple optical wavelength bands (e.g., λ_1, λ_2, λ_3, λ_n) that are transmitted through the fiber optic line (col. 4, lines 45-48). Didden further discloses a sensor may be de-selected, or inactivated or being "off", for example by not illuminating the sensor at its characteristic wavelength, or by not converting the optical signals from such sensor to electrical signals (col. 2, lines 48-54). Therefore, it would have been obvious to an artisan at the time of invention that each of the sensors in the measurement system of Didden has an optical to electrical conversion functionality in order to provide the sensor output data to a remote link or to a user for further signal processing or signal measurements.

Applicant's attention is directed that during the prosecution of a pending patent application the terms found in the claims should be given the broadest reasonable interpretation, *See in re Pearson,* 181 USPQ 641 (CCPA 1974).

Regarding claims 48-49, Didden discloses the multiple optical wavelength bands are transmitted singly or simultaneously through the fiber (col. 4, lines 40-48).

Regarding claim 52, Didden discloses optical coupling for the optical wavelength bands (col. 3, line 35, col. 4, lines 30-32).

Regarding claim 53, Didden discloses a tunable laser (col. 4, line 31-32, col. 7, lines 50-53).

Regarding claim 56, Didden discloses the electrical power is supplied to the selected well tools in a manner which transmits data in a selected one of digital or analog form (col. 5, lines 60-65).

Regarding claims 57-58, Didden discloses the well tools are data storage devices (col. 6, lines 41-50).

Regarding claims 59 and 61, Didden discloses there are multiple sensors interconnected in the fiber line (col. 3, lines 34-35).

Regarding claim 60, Didden discloses the sensor includes an intrinsic fiber Bragg grating (col. 3, lines 38-39, 43-67).

12. Claims 45-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Didden et al. (US patent No: 6,271,766) in view of Otani et al. (US patent No: 6,115,156).

Regarding claims 45-47, Didden differs from the claimed invention in that Didden does

not disclose a WDM drop including an optical circulator and a Bragg grating interconnected between the fiber optic line and the respective well tool. Didden discloses a plurality of sensors that each may be similar to any fiber optic grating based sensor (col. 3, lines 38-39), and further discloses multiplexing techniques may be used to distinguish one sensor from another sensor, and the characteristic or reflection wavelength of the grating in each sensor may be different (col. 4, lines 41-48). Otani discloses a WDM demultiplexer (col. 4, lines 15-37 and 19, fig. 1) that includes an optical circulator (27, fig. 2) and a Bragg grating (28, fig. 2). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate a WDM demultiplexer that includes an optical circulator and a Bragg grating such as the one of Otani for each of the fiber optic grating based sensor of Didden in order to selectively pass or prevent the transmission of a specific wavelength band to respective sensors so that each sensor can measure one or more different parameters such as resistivity, pressure, or temperature.

13. Claim 50-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Didden et al. (US patent No: 6,271,766) in view of Chown (US patent No: 4,182,935).

Regarding claim 50, Didden differs from the claimed invention in that Didden does not disclose multiple tunable filters and a first optical coupler interconnected to the fiber line. Chown discloses an optical fiber transmission system (fig. 5) that is comprised of a transmitter (11, fig. 2 and 20, fig. 5), a fiber line (13, figs. 2, 5), a first coupler (14, figs. 2, 5), a plurality of optical filters (col. 3, lines 16-20), and a plurality of optical sensors (16, fig. 2 and R, fig. 5). Therefore, it would have been obvious to an artisan at the time of invention to incorporate an optical coupler and filters such as the ones of Chown for the optical transmission system of Didden in order to

selectively pass or prevent the transmission of a specific wavelength band to different sensors such that each sensor can measure one or more different parameters such as resistivity, pressure, or temperature.

Regarding claim 51, Chown further discloses tunable filters (col. 1, lines 52-54, col. 3, line 19 and figs. 5, 6) that are interconnected between a first optical coupler and a second optical coupler (branch couplers in fig. 6).

14. Claims 54-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Didden et al. (US patent No: 6,271,766) in view of Sichling (US patent No: 4,346,478).

Regarding claim 54, Didden differs from the claimed invention in that Didden does not disclose the opto-electric converter is connected to a switch. Sichling discloses a fiber optic sensor system (34, 36, 38, fig. 1) for transmission of information from one location to another (col. 2, lines 50-56), wherein the sensor system includes an opto-electric converter (34, figs. 1, 3) that is connected to a switch (70, fig. 3). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of invention to incorporate a sensor system with opto-electric conversion circuitry and a switch such as the one of Sichling for the optical sensors in the measurement system of Didden in order provide respective opto-electric conversion circuitries that can generate respective electrical signals that can be used for further signal processing or to measure different physical parameters such gas flow, pressure, or temperature.

Regarding claim 55, Sichling discloses the switch is a field effect transistor (col. 8, lines 9-10).

15. Applicant's arguments with respect to claims 11-13, 19-20, 25, 27-28, 30, 39, 40 and 44-61 have been considered but are moot in view of the new ground(s) of rejection.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. R. Sedighian whose telephone number is (703) 308-9063. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

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